

# Environmental Quality in Connecticut

The 2002 Annual Report of the Council on Environmental Quality

30



STATE OF CONNECTICUT

## COUNCIL ON ENVIRONMENTAL QUALITY

May 30, 2003

The Honorable John G. Rowland  
Governor of Connecticut  
State Capitol  
Hartford, CT 06106

Dear Governor Rowland:

I am pleased to submit this annual report on the status of Connecticut's environment.

Exactly 30 years ago, this Council issued its first annual report to Governor Thomas Meskill. Today we see how the positive trends in our air, land, and water have affirmed that report's conclusion: *"Environmental action cannot be a temporary movement... We must dedicate ourselves to maintenance of a permanent and vigilant attitude of environmental scrutiny. This must be a reasoned and analytical approach..."*

I hope you find that this report follows the course charted so clearly by that first Council. Part I documents 2002's unprecedented successes in land conservation, and updates you on the status of the fight against invasive species. In Part II, we have expanded our pioneering use of numerical indicators to track progress toward Connecticut's environmental goals. Part III describes the Council's activities of 2002.

Respectfully,

Donal C. O'Brien, Jr.  
Chairman

79 Elm Street, Hartford, CT 06106  
Phone: (860) 424-4000 Fax: (860) 424-4070  
<http://www.ct.gov/ceq>

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**“30”**

The first report of the Council on Environmental Quality was submitted to Governor Thomas Meskill in 1973. This report honors the groundbreaking work of that first group of citizen members and 30 years of environmental progress.

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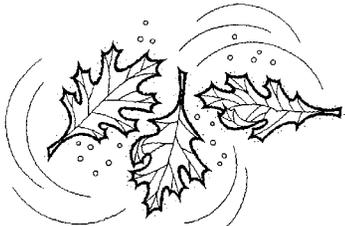
# Part I Progress Reports

*Summarizing progress toward the recommendations of previous CEQ reports*

## *Winning the Race for Open Space*

The Department of Environmental Protection (DEP) again broke its own record for acreage conserved in a single year when it closed on the largest open space acquisition in Connecticut history. More than 18,000 acres of land owned by the BHC Company were conserved through a combination of outright purchase (5,500 acres) and acquisition of permanent conservation easements. The latter leave the land in private corporate ownership but grant legal, enforceable assurances that the land will never be developed. (Only the acres purchased outright are reflected in the graph at right.) The Nature Conservancy contributed 10 million dollars to the deal, and most of the remaining 82 million dollars were authorized by the General Assembly specifically for this purchase.

How much is 18,000 acres? It's more than half the area of Connecticut's entire State Park system. (The 95 State Parks cover about 34,000 acres.)

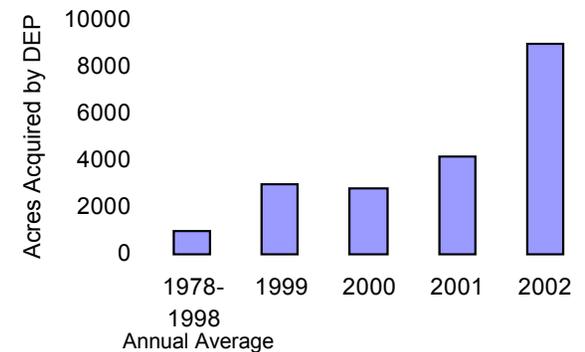


Most of the lands owned by the BHC Company – often known as the Kelda Lands, after the name of the BHC Company's parent company – were already protected from development by laws that restrict development of water company lands. However, water company lands have been abandoned and sold with regularity since the 1970s. It is easy to envision a weakening of the protective laws in the future to allow limited development, and these lands could never have been considered to be permanently conserved unless protected by a deal such as the one completed in 2002.

This monumental conservation project followed two years of negotiation and cooperation among Governor John Rowland, the water utility, the DEP, the General Assembly, and many towns, conservation organizations, and individual citizens. The Coalition for the Permanent Protection of Kelda Lands guided approximately 50 elected officials and 75 organizations in working toward a common purpose. The Council recognizes this effort as a historically significant conservation triumph.

Also in 2002, the DEP acquired about 3,500 acres through 61 other projects, and helped cities, towns and land trusts conserve 1700 acres more. Since 1999, when the state's programs to conserve land were strengthened, streamlined, and financed with substantial bond authorizations, such totals have become routine. But they represent a true departure from the past. Including the lands described above, more acres have been conserved since 1999 than – to use the same comparison as above – exist in the entire state park system.

Open Space Acquisition by DEP



## Past and Future

Just as in 1996, when the CEQ issued “The New Race for Open Space,” the conservation of land remains Connecticut’s biggest environmental challenge. But the programs to conserve land have changed dramatically. Then, open space acquisition was a seemingly random activity with no specific goal and no plan for spending whatever modest sums were allocated to it. Now, the effort is defined by:

- **Clear Goals:** Connecticut’s goal is to have 21 percent of our land area preserved for posterity by the state, municipalities, land trusts and water companies combined, including at least 10 percent in state ownership.
- **A Plan:** “The Connecticut Green Plan: Open Space Acquisition” was published in 2001 by the DEP with CEQ assistance.
- **Predictable Funds:** The DEP now is able to operate like a professional organization, knowing how many dollars it can spend in each six-month period. The Bond Commission allocates funds to the DEP in “lump sums” twice yearly, a predictable approach that is essential to the state’s dealings with landowners who demand that sales be closed on time.
- **Willing Partners:** Municipalities and conservation organizations have spent millions of dollars in partnership with the state.

In admiring the recent conservation success stories, it might be easy to regard some of the above changes as bureaucratic affairs of minor importance. In reality, these legislative and administrative improvements have put Connecticut on a whole new course of land conservation. Any significant change could jeopardize the chance to reach the goals it has set.



## Great Infestations

The second biggest threat to Connecticut's natural habitats is invasion by alien plants and animals (behind loss of habitat to sprawling land development.) With few natural enemies, these species grow, spread, and multiply so fast they can transform healthy ecosystems into weed-choked woodlands and waterways in just a few years. Worse, many of our native plants and animals are deprived of light, nutrients and ultimately their continued existence. Collectively, invasive species are a silent but serious environmental problem for which Connecticut is not prepared.

Federal agencies have agreed on a working definition of invasive species: "an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health."

From colonies of the tiny zebra mussel to stream-clogging water chestnut plants, invaders threaten to cost the state many millions of dollars to species at bay. People often find out too late that the invasive species taking dollars. Already, state agencies and nonprofit land conservation organizations are finding they must spend hundreds of thousands of dollars to keep these species at bay. People often find out too late that the invasive species taking over their favorite pond or field can be controlled only by applying chemical herbicides. Many species will turn out to be mere nuisances, while a few, if left alone, will be ecological disasters for Connecticut.

In "Great Infestations," a special report published in early 2002, the Council noted that several state agencies are taking important steps to prepare for this problem, along with conservation organizations and the horticultural industry. Unfortunately, reliable polling data show that the Connecticut public is largely unaware of this environmental threat.



Hydrilla (*Hydrilla verticillata*)

## 2003 Update on the Green Invaders

In January 2003 three state organizations published a revised list of invasive plant species.\* The number of species classified as "widespread and invasive" rose 15 percent (to 28 from 24) since 2001.

Connecticut's response to the threat has been inadequate. Many of the battles waged against specific invaders have been led by dedicated volunteers, sometimes with modest support of concerned state agencies and sometimes without. Many of these efforts, as well as educational campaigns, are coordinated by the ad hoc Connecticut Invasive Plant Working Group, which was organized and is operated through individual initiative. Funding has been sporadic at best. There is no plan or statewide assessment of priorities.



Water Chestnut  
(*Trapa natans*)

## Banned in Connecticut!

The General Assembly and Governor John Rowland laid the cornerstone in early 2003 for future success against many of the most dangerous invaders. Public Act 03-136 creates a formal Invasive Plants Council to be responsible for publishing lists of invasive species, informing the public, and recommending supplemental laws. The new law also prohibits state agencies from buying invasive species, and bans all trade in seven aquatic plant species (including the two pictured in these pages). Boaters will also be required to inspect their boats and trailers and remove any vegetation they find. This historic Act is the important first step in a campaign that ultimately will require many years of work, millions of dollars of public and private funds, and eternal vigilance with an uncertain end.

“Great Infestations” can be viewed on the CEQ website: <http://www.ct.gov/ceq/LIB/ceq/20/7/greatinfestations.pdf>

\* *Non-native Invasive and Potentially Invasive Vascular Plants in Connecticut*, created and published by the George Safford Torrey Herbarium at the University of Connecticut, the State Geological and Natural History Survey within the DEP, and the Connecticut Invasive Plant Working Group.

## Part II

### Indicators of Environmental Trends

#### **“Is the environment getting better?”**

This is the question most frequently asked of the CEQ. To help answer it without bias, the Council established a set of environmental indicators which display progress (or lack of it) in 29 important areas.

Most of these indicators are bottom-line statements of the actual condition of our air, water, land, and wildlife. The focus is on results, rather than on government programs, budgets, enforcement action, or new laws. When reviewing any indicator, the reader should note that the subtitle appearing under the title describes exactly what is being measured.

Where possible, each graph illustrates progress toward the state’s official goal as expressed in state law or relevant state planning documents.

The overall story told by these indicators is one of slow but steady progress. In 2002, most revealed improved conditions. However, there are a few important indicators that once showed long-term progress but now display no discernible trend. “Good Air Days” depicts 2002 levels that were no different from those of 10 years before. A more detailed indicator of pollution in Connecticut’s air, “Average Air Pollution Levels,” shows a leveling-off in the total amount of pollution in our air in contrast to many prior years of dramatic progress. Now Connecticut residents must wait to see if recently-adopted laws on power plant emissions and the state’s aggressive legal actions against out-of-state polluters will yield future improvements in these indicators.

“Drinking Water” also indicates a recent retreat from the long-term progress that had been the norm. Along with the air quality indicators, this will receive special scrutiny from the Council in future years.

Last year’s report included a new indicator that illustrates trends in the incidence of breast cancer in Connecticut. One more indicator was added this year: Incidence of Non-Hodgkin’s Lymphoma. There are many complex factors that play a role in the development of Non-Hodgkin’s Lymphoma, but several studies have concluded that some of those factors are likely to be found in our environment. The Council suggests that the relationship between human health and the environment should be monitored more closely, and intends to expand this type of indicator as data become available

#### *New!: “Leading Environmental Indicators”*

Seven of the indicators that follow do *not* actually depict the status of our air, land, or water. Instead they illustrate trends in pollution discharges and human behaviors that are *expected* to yield a changed environment. For example, reductions in nitrogen discharges to Long Island Sound, while telling us little about the environment directly, are important because they are expected by scientists to result in better water quality in the years ahead. Similarly, greater recycling should result in better air and water quality in the long term. The Council now groups this type of indicator in a new category called “Leading Environmental Indicators.” Any comments or suggestions readers might have for refining this category are welcome (see p. 42).

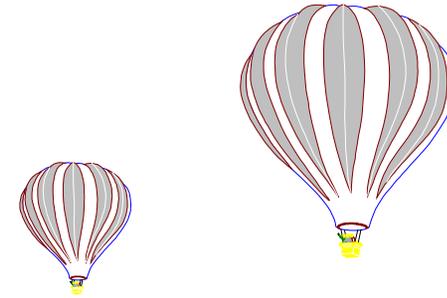
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## Good Air Days

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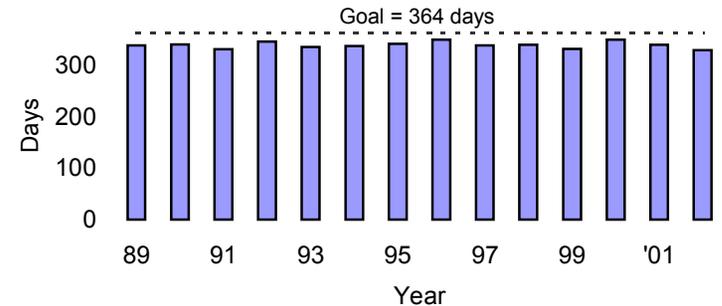
Number of days that every monitoring station recorded satisfactory air quality

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### Background

"Satisfactory air quality" is defined here as air that meets the health-based ambient air quality standards for all of the following six pollutants: sulfur dioxide, lead, carbon monoxide, particulates, nitrogen oxides, and ground-level ozone. Connecticut's goal (revised in 2001) is to have air that meets all health-based standards 364 days a year by the year 2007.



### Trends

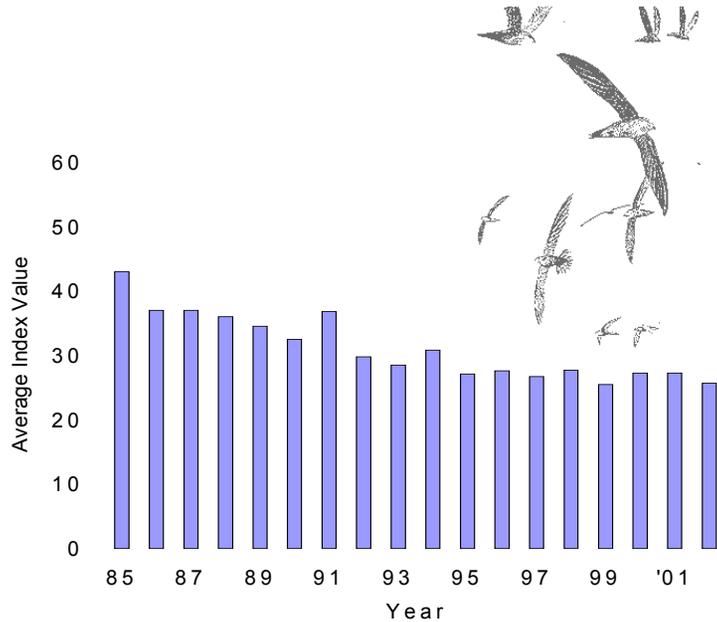
Violations of the health-based air quality standards have been eliminated for all pollutants except ground-level ozone. (Ground-level ozone is created when nitrogen oxides and volatile organic compounds react in the presence of sunlight.) Motor vehicles remain a major source of ozone-forming emissions despite improvements in tailpipe standards. Much ground-level ozone originates in states to Connecticut's west. Hot sunny weather yielded more bad-air days in 2002 than in any of the previous 12 years. It is difficult to discern a trend that will get Connecticut to its goal of clean air every day.

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## Average Air Pollution Levels

### Six major pollutants

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### Background

Six air pollutants -- sulfur dioxide, lead, carbon monoxide, particulates, nitrogen oxides, and ground-level ozone -- are measured across the state by the DEP. At the end of every year, the average level of each pollutant is expressed on a numerical scale, where zero equals no pollution and 100 represents the “unhealthful” level of the specified pollutant. This indicator shows the average level of the six pollutants.

### Trends

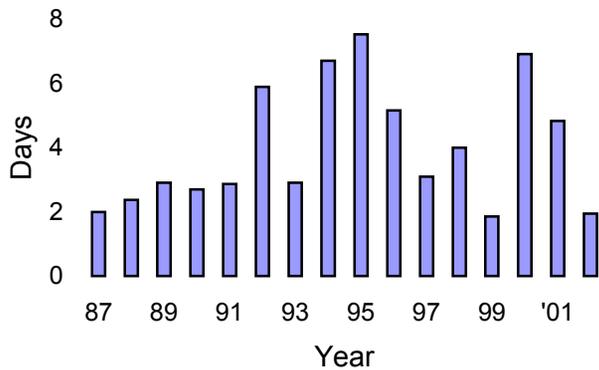
Most of the improvement since 1987 is due to reductions in carbon monoxide, sulfur dioxide, and particulate emissions. Levels of lead in the air have dropped so low that they barely register in this indicator. The rise in 2000 was due mostly to an increase in carbon monoxide and nitrogen dioxide levels. In 2002, four of the six major pollutants went down, but ozone levels have increased since 2000.

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## Beach Closings

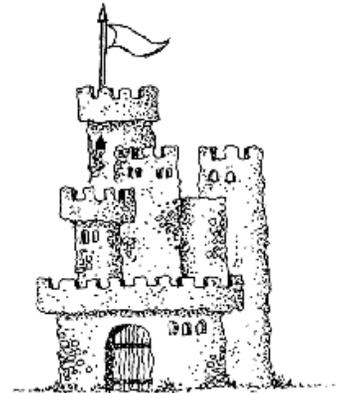
Average number of days coastal municipalities closed one or more of their beaches

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### Background

Connecticut's goal is to eliminate beach closings caused by discharges of untreated or poorly treated sewage, the most common cause of elevated bacteria levels. After rain storms, runoff and overflows from combined sanitary/storm sewers are presumed to contaminate the water, prompting some towns to close beaches automatically as a precaution following a heavy rainfall. (See page 19 for more information about combined sewers.)



### Trends

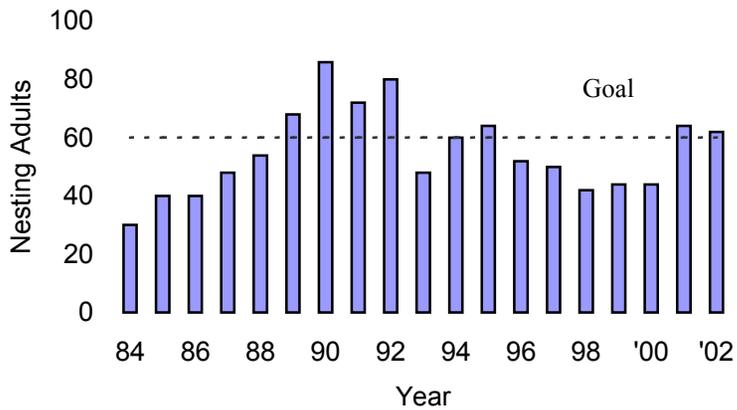
Yearly variations are a product of rainfall patterns and incidents such as sewer-line ruptures. The sharp increase in beach closings in 2000 was the result of a rainy summer. The dry summer of 2002 brought far fewer closings. Some towns also credit better enforcement of sewage regulations.

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# Piping Plover

## Number of adults nesting in Connecticut

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### Background

Piping plovers are thrush-sized shorebirds that nest on sandy, vegetation-free beaches, often with least terns. Human intrusion, storm tides, and predators frequently destroy nests. Nesting adults are counted and in most cases protected every spring by the DEP and volunteers working with The Nature Conservancy. The piping plover's status is "threatened." The protections afforded these plovers benefit other nesting species.



### Trends

Since protection and monitoring efforts began in 1984, nesting success has improved, resulting in more returning adults in subsequent years. Yearly variations can occur when adult birds move from one state to another. Diminishing habitat and more disturbances are forcing many birds to nest within the vegetation zone and below the storm tide line where predation and washout took a toll in 2002.

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# The Sound in Summer

## Area (and percent) of Long Island Sound affected by hypoxia

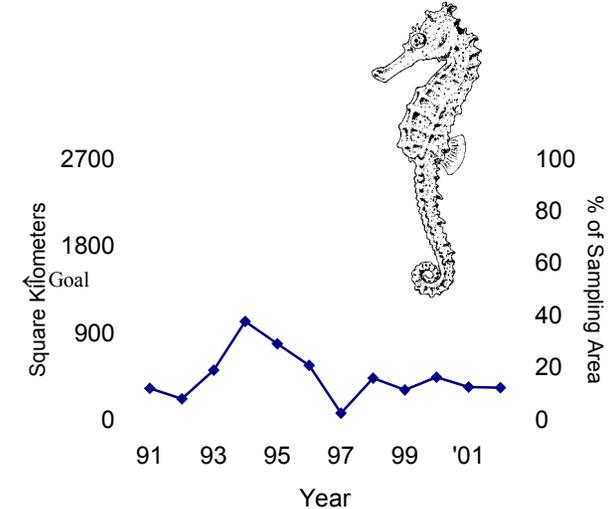
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### Background

Hypoxia is the condition in the water when oxygen levels are too low to support desirable forms of life. (For this indicator, hypoxia is defined as less than or equal to 3 mg/l of dissolved oxygen.) Hypoxia occurs when nitrogen stimulates excessive growth of aquatic plants, which die and are consumed by oxygen-using bacteria. Weather greatly influences hypoxia, making year-to-year changes less important than long-term trends. Connecticut's goal is to eliminate the effects of hypoxia.

### Trends

All of the hypoxia has occurred in the western two-thirds of the Sound. Year-to-year fluctuations reflect weather patterns. A mild winter and a relatively cool summer, resulting in fairly uniform water temperatures, caused the significant improvement in 1997. The summers of 1999, 2001 and 2002 were dry, with less nitrogen from runoff reaching the Sound, whereas 2000 was rainy and saw slightly higher levels of hypoxia. To reduce the nitrogen inputs that cause hypoxia, Connecticut and New York adopted a comprehensive management plan in 1994, and built upon that Plan with an expanded agreement in December 2002.



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# Tidal Wetlands Conservation

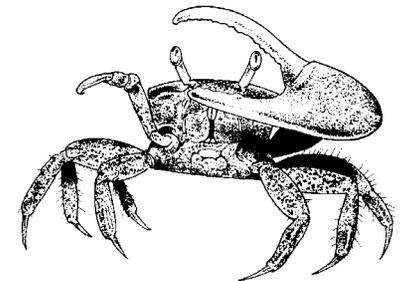
## Acres Degraded and Restored

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### Background

*Degraded* acreage is the area permitted for development activity by the DEP. *Restoration* includes work performed by the state as well as by landowners required by the DEP to restore wetlands as conditions of their permits. Restoration acreage is counted only where tidal flow has been restored *permanently*, and does not include minor enhancements or vegetation management. Improvements might or might not add to the state's total wetlands acreage, depending on the land's classification as wetlands or non-wetlands prior to restoration. Tidal wetlands are estimated to cover 17,500 acres of Connecticut, though no precise inventory has been completed. Connecticut's goal is to produce net increases in tidal wetlands acreage and function.



### Trends

With the exception of 1995, less than one acre of tidal wetlands was lost each year to permitted development, and many degraded acres were restored. In 2002, more than 100 acres were restored, mostly associated with the Connecticut and Quinnipiac Rivers. (This reflects a conservative use of the term "restoration" that includes only those wetlands where tidal flow was restored; it does not include the many acres where work was done just to control the invasive common reed *Phragmites*.)

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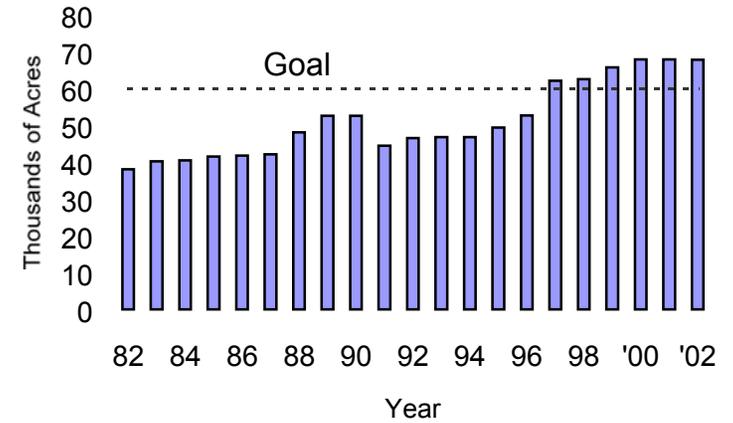
# Shellfish Beds

Acres open for commercial harvesting

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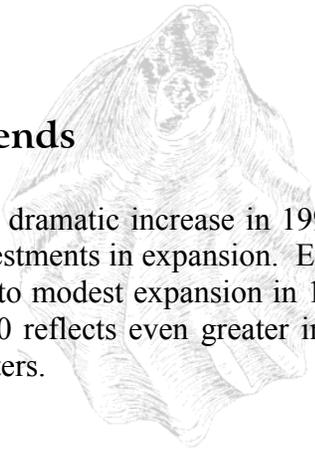
## Background

Connecticut's goal was to have 60,000 acres open by the year 2000, which is far fewer acres than were open a hundred years ago. The primary impediments to opening more acres are the presence of sewage discharges and the need to conduct frequent monitoring to satisfy federal health-assurance requirements. Beds are counted as open when they are clean enough and monitored sufficiently.



## Trends

The dramatic increase in 1997 was attributed largely to a decade-long increase in the commercial value of Connecticut's harvest, which prompted investments in expansion. Expansion has been a cooperative venture of industry and state government. Water quality and monitoring improvements led to modest expansion in 1998 and 1999, even as the industry saw oyster stocks depleted by disease in 1998. The expansion of shellfish beds in 2000 reflects even greater interest in the oyster industry as some lobstermen, responding to declining lobster populations, switched to harvesting oysters.



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# Osprey

## Number of adults nesting in Connecticut

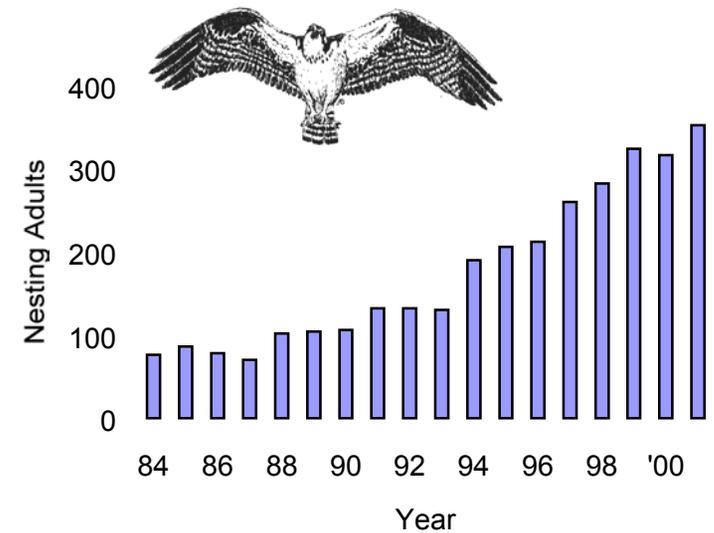
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### Background

Ospreys are fish-eating birds of prey that live throughout the world. Locally, they nest mostly along the shoreline of eastern Connecticut, with potential to nest inland along rivers and large lakes. They require ample food supply, secure nesting sites, and an environment low in certain chemicals. The osprey's status in Connecticut is "special concern." Nesting adults are counted each year by the DEP.

### Trends

The osprey continues to rebound from its low point in the 1960s. Now, with fewer chlorinated hydrocarbons in the food chain, and after years of cooperative ventures to erect nesting platforms along the coast, nesting success continues at a rate sufficient to sustain positive growth. Several factors have led to the highest number of breeding ospreys in recent history: a record number of fledglings in recent years, installation of new predator guards on many nesting platforms, and a surge in breeding success at an area in Old Lyme considered to be the stronghold of Connecticut's osprey population.



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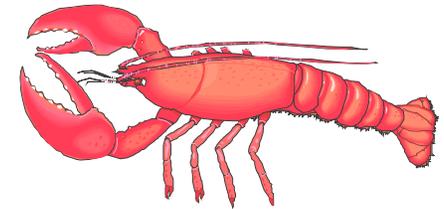
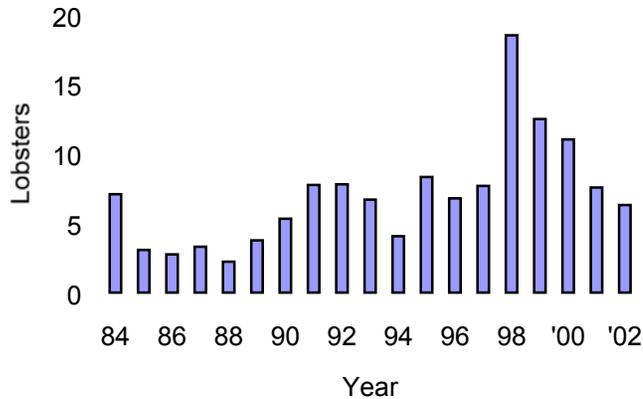
# Lobster

Average number caught (per tow)  
in nets of research vessel

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## Background

The lobster is the second most economically important marine species in Connecticut (behind oysters). This industry supports the highest number of commercial fishermen. Changes in their population might indicate changes in habitat quality. The DEP samples lobster populations every spring by towing nets from a research vessel at randomly selected sites throughout Long Island Sound.

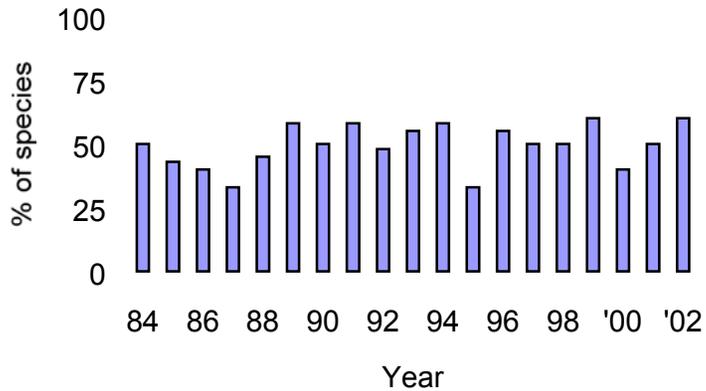
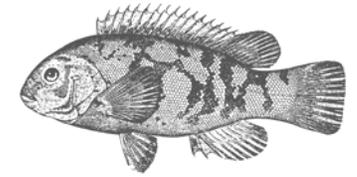
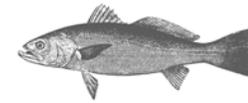


## Trends

Despite the sharp decrease over the last four years, the population is still near average. The decline was not distributed evenly across the Sound, and the western portion saw more of a decline. Researchers are focusing on a combination of four possible causes for the recent downturn: disease and immune response, changes in water quality, changes in climatic conditions, and human impacts to the Sound. Currently, there are seventeen research projects in progress to determine the cause of the decline. These projects are scheduled to conclude in 2004. Regardless of the cause, the effects have been particularly dramatic because of the extraordinarily high population of 1998.

# Seafood Sampler

Percent of marine species found to be above their median population levels



## Background

The DEP samples marine fish and invertebrates every spring and fall by towing nets from a research vessel. This indicator includes lobster, squid, and 38 species of fish (listed below) and shows general trends in their collective populations.

## Trends

Fish populations are rebounding. In 2003, the majority of these 40 species were above their long-term averages. Scientists are unsure of the reasons behind the fluctuations of the last few years.

- |                  |                    |                     |                 |                 |                     |                   |              |
|------------------|--------------------|---------------------|-----------------|-----------------|---------------------|-------------------|--------------|
| atlantic herring | hogchoker          | spanish mackerel    | moonfish        | rockling        | long-horned sculpin | northern searobin | tautog       |
| blueback herring | american kingfish  | menhaden            | ocean pout      | rough scad      | sea raven           | striped searobin  |              |
| bluefish         | winter skate       | american shad       | little skate    | striped bass    | atlantic sturgeon   | black seabass     | alewife      |
| spiny dogfish    | four-spot flounder | windowpane flounder | red hake        | silver hake     | spotted hake        | spot              |              |
| scup             | butterfish         | smooth dogfish      | summer flounder | winter flounder | cunner              | weakfish          | hickory shad |

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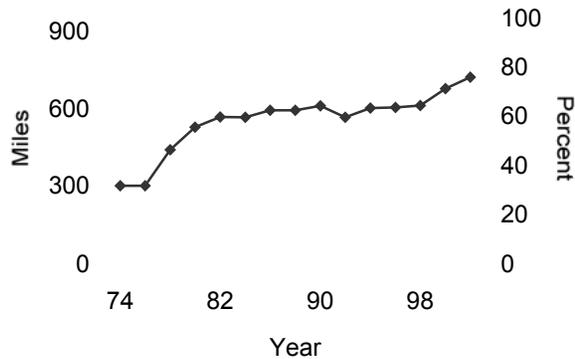
## Rivers

Miles supporting both aquatic life  
and swimming

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### Background

Of the state's 5800 miles of river and stream, about 930 miles are monitored and are considered in this indicator. In 1999 it was revised in an important way: in previous years, rivers were counted if they were both swimmable and fishable. However, since 1996 Connecticut residents have been advised to limit their consumption of freshwater fish, so no river in the state is technically "fishable," even if it sustains large populations of trout, bass, and other aquatic life. Since 1999, this indicator counts those rivers (or parts of rivers) that support both swimming and desirable aquatic life.

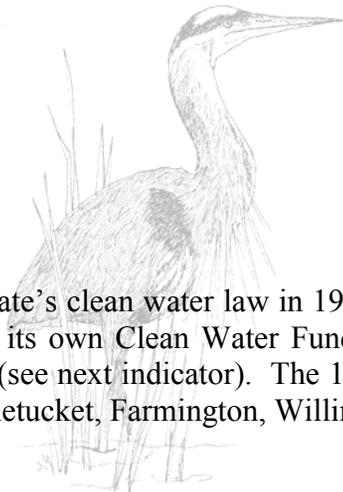


Miles of Connecticut rivers in which the  
fish are *not* contaminated with mercury:

**0**

### Trends

Progress began with the passage of the state's clean water law in 1967 and accelerated in the 1970s when federal grants for sewage treatment plants were available. Connecticut established its own Clean Water Fund in 1986, which has enabled some treatment plants to be upgraded and some combined sewer systems to be separated (see next indicator). The 1992 downturn was a change in definitions, not actual water quality. Subsequent improvements occurred on the French, Shetucket, Farmington, Willimantic and, most recently, Naugatuck Rivers.

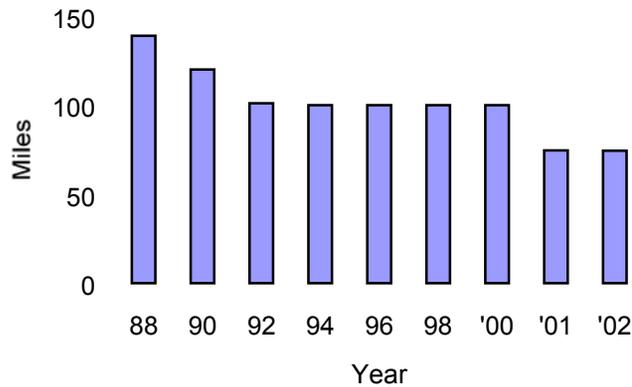


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## Sewage Overflows

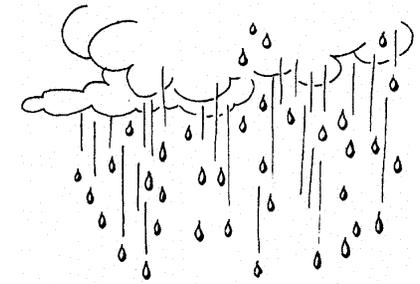
Miles of river affected by “combined sewer overflows”

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### Background

In fourteen Connecticut cities and towns, sanitary sewers were built in combination with storm sewers. During storms, these systems carry more water than their treatment facilities can handle, and a combination of storm water and untreated sewage overflows directly to the rivers and Long Island Sound. The number of days when raw sewage is actually in the rivers varies with the weather and can be quite low in some years. Several systems have been separated, and Connecticut's goal is to eliminate combined sewer systems.



### Trends

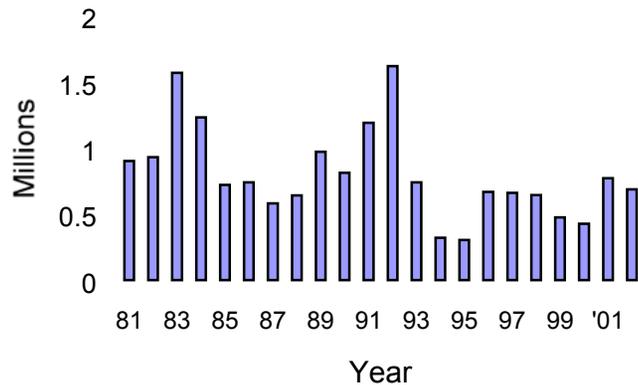
Several of the combined sewer systems have been completely or partly separated since 1990, reducing the impact of untreated sewage on rivers. Projects in Derby, Shelton, and Portland have been completed very recently, but more combined sewers must be eliminated (especially upstream) before significant improvements will be seen in this indicator. The decrease in miles affected in 2001 can be attributed to the completion of projects in the towns of Waterbury, Naugatuck, and Middletown. It also reflects greater precision in the DEP's data collection and analysis.

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# Shad

## Number returning to the Connecticut River

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### Background

The shad is an anadromous fish: born in fresh water, it lives in the ocean and returns to fresh water to spawn. Shad numbers used to be limited by dams that blocked access to spawning areas, but most major potential spawning areas in the Connecticut River and its tributaries have been made accessible with fish ladders and other improvements, including fishways.



### Trends

The decline of shad in the 1990s was observed over most of its range (East Coast rivers). Scientists are uncertain of the cause. The number of shad that returned over the past couple of years suggests that the population is returning to its expected level in response to favorable environmental conditions.

On many other rivers and streams across the state, the DEP along with towns, businesses and nonprofit organizations have worked to build fish ladders and fishways that enable anadromous fish such as alewives and blueback herring to swim upstream around dams. In 2000, a fish ladder was completed at Ed Bills Pond in Lyme with partial funding from the Corporate Wetlands Restoration Partnership (CWRP). This was the second project of the CWRP, a new national collaboration of corporations, nonprofit organizations, and government agencies. The CWRP later helped with a fishway on the West River at Pond Lily Dam in New Haven. Connecticut's goal is to re-open 100 miles of dammed streams to anadromous fish.

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## Forest

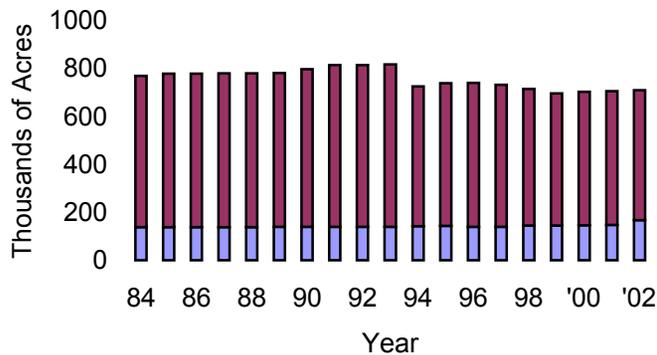
Combined acreage of 1) state forest and 2) privately-owned forest that is enrolled in Connecticut's preferential tax-rate program (P.A. 490)

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### Background

Connecticut's goal is to conserve forests for multiple use, which only can be accomplished on parcels of sufficient size. Much forest is owned in small parcels, which often have limited value for wildlife, wood production, and other uses. To be eligible for property-tax benefits under Public Act (P.A.) 490, a landowner must own 25 or more acres of forest. Though imperfect, this indicator shows trends in the state's most beneficial forests, which are those in tracts larger than 25 acres.



■ State Forest ■ Private (P.A. 490)

### Trends

The apparent upward trend in forest acreage during the 1980s was believed to be a product of property revaluations, which prompted many landowners to enroll their land in P.A. 490 for the first time. Surveys of forest landowners show an average age of more than sixty years; the realities of inheritance will probably result in significant break-ups of large land holdings, which might be one important cause of this indicator's negative turn since 1993. The drop in 1998 and 1999 reflected improvement in the DEP's data management; much private land that was developed years ago was not deleted from the DEP's P.A. 490 records until 1999. In 2002, thousands of acres of forested land shifted from private water utility ownership to state ownership, creating the new Watershed State Forest (see page 1 for more details). State forests also gained 3,000 more acres from other acquisitions throughout the state.

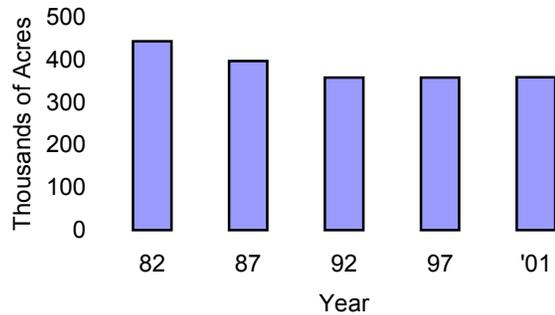
# Farmland

## Acres of land in farms



### Background

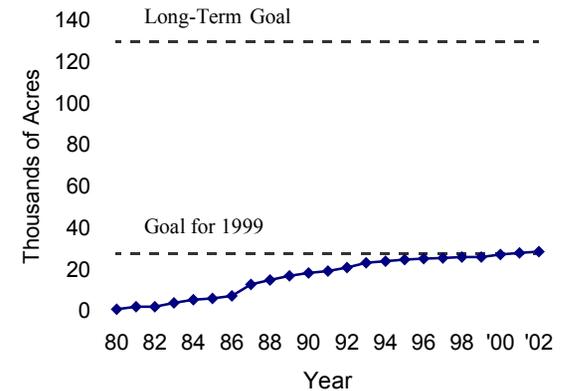
The graph at left illustrates the total acreage of land in Connecticut farms, as estimated by the U.S. Department of Agriculture. To preserve land for future agricultural use, the state Department of Agriculture purchases the development rights to farmland (from volunteer sellers only). This keeps the land in private ownership with severe restrictions on future nonagricultural development.



### Trends

The graph above shows that farmland in the state has remained close to 360,000 acres over the past ten years. The graph at right shows that the state's progress toward its long-term preservation goal has been slow but not unsuccessful. Seven farms were preserved in 2002 by the Department of Agriculture's Farmland Preservation Program.

Acres Preserved by the Department of Agriculture (Cumulative)

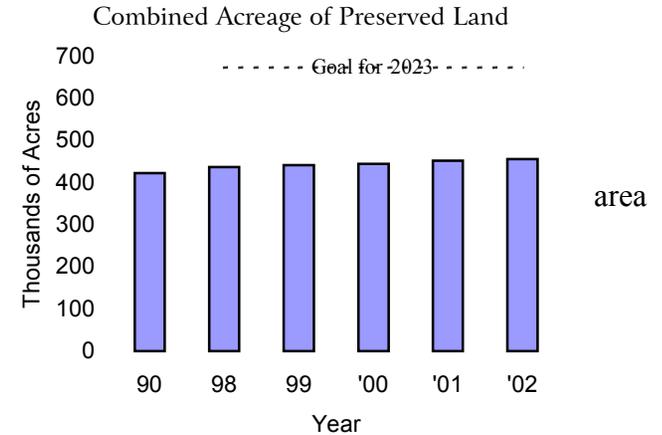


# Land for Life

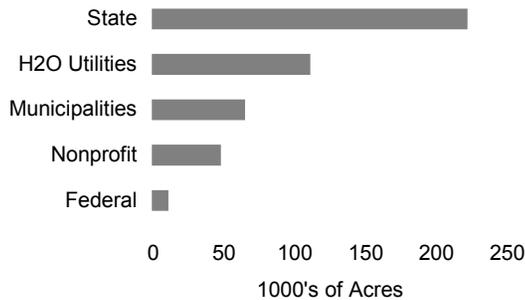
## Acres of preserved land

### Background

In 1998, Governor John Rowland declared a goal of conserving 21% of Connecticut’s land by 2023. P.A. 99-235 reinforced this goal. The combined acreage graph (right) displays progress toward the 21% goal. Current acreage of each type of land is shown in the chart below. The types of land are: state-owned forests, parks, and wildlife areas; Class I and II watershed lands owned by water utilities; estimated municipal open space; estimated nonprofit lands (land trusts, The Nature Conservancy, etc.); and federal conservation land.



Acres of Conserved Land  
By Ownership (as of 2002)



### Trends

Modest areas of land were preserved in the early 1990s. After Governor Rowland and the General Assembly improved the open space statutes and committed substantial funds in 1998, the DEP acquired record acreage in 1999 through 2001. The DEP acquired approximately 3500 acres in 2002, and 1700 acres were permanently protected through grants to towns, cities, and land trusts (see page 1 for more information).

Also in 2002, there was a shift in land ownership from water utilities to the state when the DEP purchased 5,471 acres of Class II and III BHC Company land to ensure its preservation. Conservation easements were purchased on 9,025 acres of Class I land. This open space acquisition spanned four counties and was the largest in Connecticut history. *(Scorekeeping details: The Class I and II acreage was previously counted as water utility lands, so the 2002 deal does not add this land to the total acreage of land preserved. Only the Class III land, which had been never counted as preserved land anywhere on this page, was added to the top graph when it was acquired by the state.)*

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## White-Tailed Deer

Average diameter of antlers on yearling deer (one to two years old)

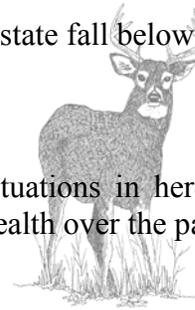
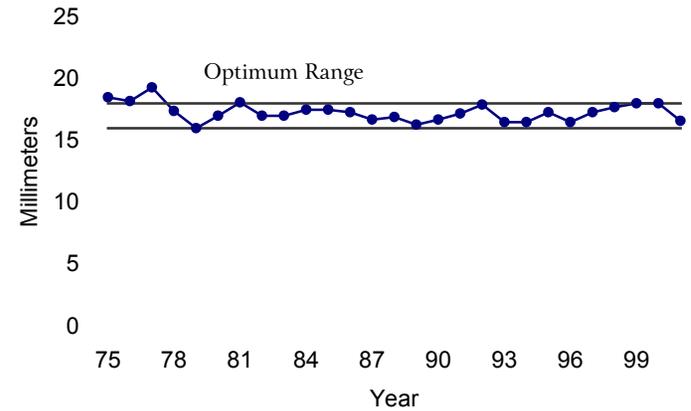
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### Background

Healthy, robust young deer have thicker antlers than those that receive less nourishment. Antler beam data reflect the relative health of the deer herd as well as the condition of their habitat. Since deer share woodland and edge habitats with many wildlife species, this indicator is doubly useful. Connecticut's goal is to maintain a statewide average of at least 16-18 millimeters, and to let the average in no region of the state fall below 16 millimeters.

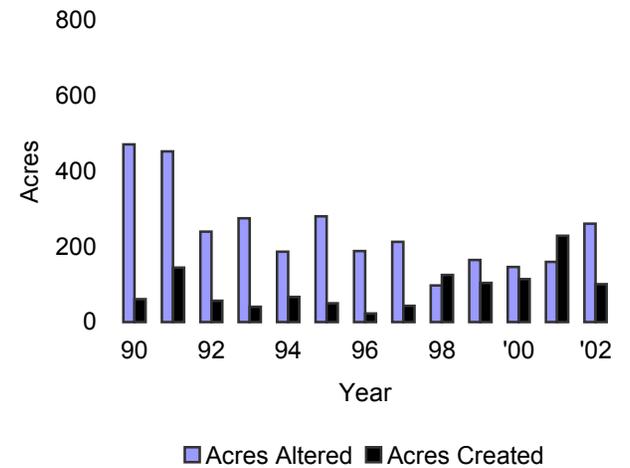
### Trends

Connecticut's deer population appears to stay within the targeted range. Minor fluctuations in herd health from year to year probably reflect fluctuations in food availability and winter conditions. The herd has remained in good health over the past few years.



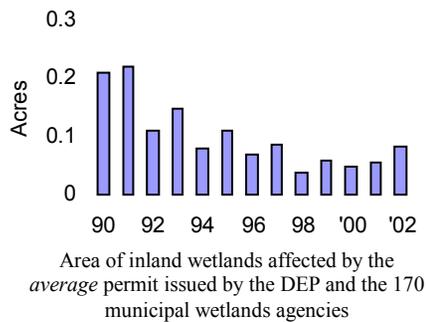
# Inland Wetlands Loss

Acres altered each year by development activity permitted by the DEP and 170 municipal wetlands agencies



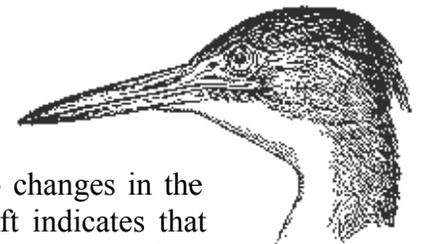
## Background

The graph at right shows the acres altered and the number of those acres replaced by human-made wetlands. “Altered” wetlands are those affected directly by human activity, which can range from total destruction (when the wetlands are filled and built upon) to conversion from one type to another (as, for example, from shallow marsh to open water). No attempt is made here to evaluate the success of the created wetlands or their value relative to the natural wetlands altered. There is no goal for wetland loss; inland wetlands are estimated to cover about 450,000 acres, or about 15% of Connecticut's surface.



## Trends

Some of the ups and downs in wetlands loss since 1990 are directly related to changes in the economy and the number of applications received. However, the graph at left indicates that wetlands agencies also have become more conservative. Municipal wetland agency members and staff have many more opportunities for training than they did in 1990.

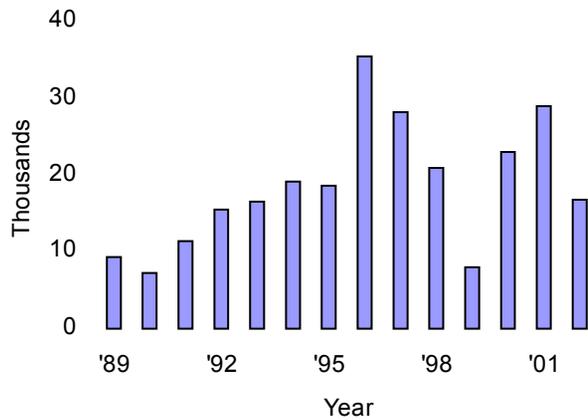


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# Wood Duck

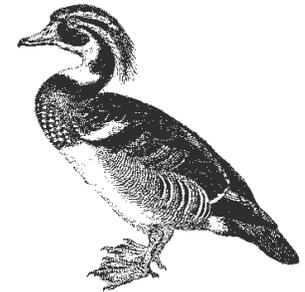
Estimated number of adults  
nesting in Connecticut

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## Background

Wood ducks are medium-sized waterfowl that nest in hollow trees and human-made boxes near fresh water throughout eastern North America, including inland Connecticut. They require relative seclusion, unpolluted inland wetland habitat, and protection from over-hunting (which almost caused the bird's extinction in the early twentieth century). Many other species share these habitat requirements. Population estimates are made annually by the DEP.



## Trends

Many Connecticut citizens have assisted in the placement of nesting boxes near ponds and wetlands. A concentration of ducks at one of the sampling plots may have contributed to inflated estimates in 1996 and 1997. The apparent sharp drop in the 1999 population also might be due to a change in sampling techniques. Poor habitat caused by dry conditions has been linked to the decline in 2002.

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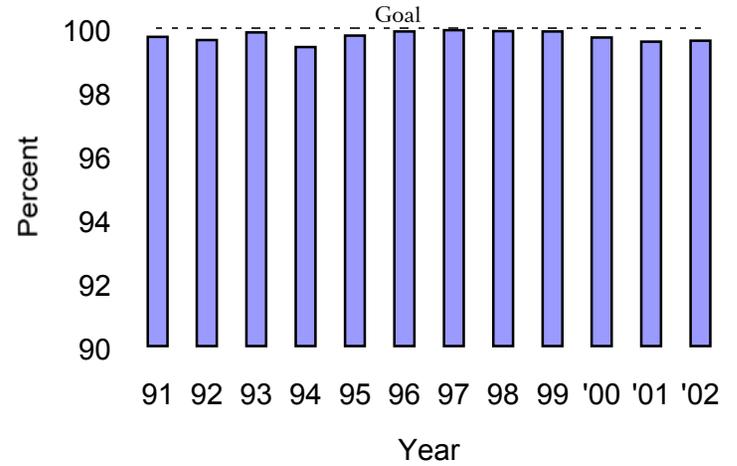
# Drinking Water

Percentage of public water being delivered that meets all standards

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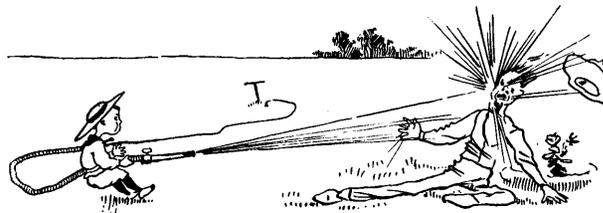
## Background

Every public water utility submits monthly water quality reports to the Department of Public Health. This indicator shows the percentage of monthly reports that show full compliance, after weighting the reports to account for the number of people each utility serves.



## Trends

Though problems persist, they occur most frequently with small systems serving relatively few households. This indicator would show more fluctuations if the larger systems failed to deliver good water, since it takes into account the number of people served by each system. For example, one large system had problems that persisted for approximately three months, resulting in the observed decline in 2001. While no major water companies reported contamination problems in 2002, numerous smaller companies had problems, sustaining the lowered compliance rate.

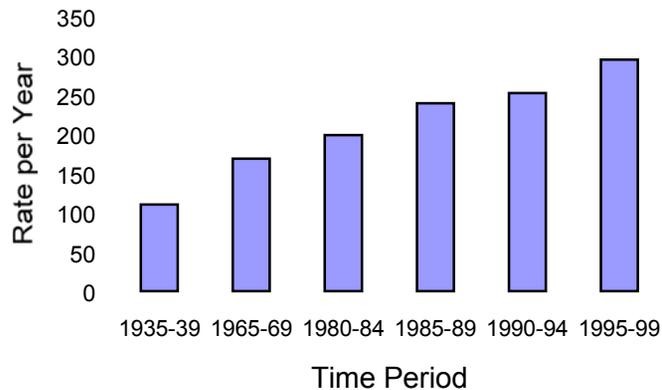


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## Breast Cancer in Connecticut

Number of new cases per year  
per 100,000 women aged 50 to 54

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### Background

The graph shows the number of women in every 100,000 women in the state aged 50 to 54 in whom breast cancer is detected each year. While some breast cancers are linked to genetic factors, the majority are associated with non-genetic factors including diet, reproductive history, lifestyle, and external agents. There are numerous hypotheses connecting certain chemicals to breast cancer. Other hypotheses point to different environmental causes, including nighttime lighting and proximity to nuclear reactors. These factors, if significant, do not appear to be as important statistically as a woman's own reproductive history, but it is important to note that breast cancer rates vary greatly in different parts of the country. Among the fifty states, Connecticut has the highest incidence of breast cancer. *(Source: American Cancer Society)*

### Trends

There is little doubt that some of the increase since 1980 is attributable to better detection methods. But better detection, which might save lives by allowing for earlier treatment, cannot be responsible for all of the apparent increase in new cases.

### Commentary

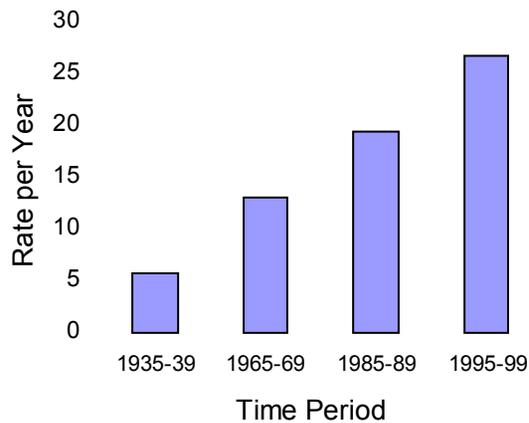
The Council intends to include more human health indicators in future annual reports where the statistics are reliable. Breast cancer is not the only cancer for which Connecticut is above the 50-state average. It is third highest in non-Hodgkin's lymphoma (page 29), second in male and third in female bladder cancer incidence rates. The reasons for the high rates and long-term upward trends in some cancers are complex and elusive, but deserve the state's full attention.

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# Non-Hodgkin's Lymphoma

Number of new cases per year  
per 100,000 residents aged 50 to 54

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## Background

Non-Hodgkin's Lymphoma is a cancer of the lymphatic system. It begins in the lymphoid tissue which contains lymphocytes, white blood cells that help the body fight infections. Lymphocytes travel throughout the body and can carry abnormal lymphocytes to spread the cancer to other regions. The data for this indicator are from the Department of Public Health's Tumor Registry, which records all known cancer cases in the state.

## Trends

Non-Hodgkin's lymphoma has increased markedly since recordkeeping began. The reasons are not well understood, though the rise of Acquired Immune Deficiency Syndrome (AIDS) since the 1980s accounts for some cases. Several studies also cite environmental factors, including exposure to certain fertilizers and pesticides.

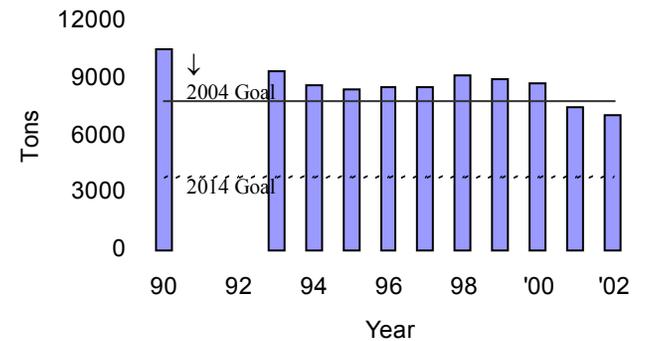
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# Nitrogen

Tons discharged into Long Island Sound from Connecticut's sewage treatment plants and large industrial facilities

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*Leading Environmental Indicator #1*



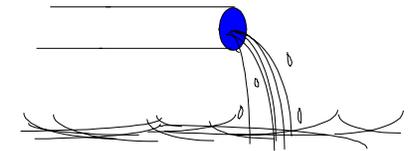
## Background

The amount of nitrogen dumped into Long Island Sound and its tributaries affects oxygen levels in the water. (See description of hypoxia on page 12.) Overall, Connecticut's share of the total nitrogen pollution in Long Island Sound is about one-third, and New York's is two-thirds. In April 2001, the federal Environmental Protection Agency approved the New York and Connecticut joint plan for implementing a Total Maximum Daily Load (TMDL). The TMDL is the maximum amount of pollutants that can be discharged while still allowing water quality standards to be attained. Connecticut's target for 2004 is 7840 tons (or less) per year and its final target for 2014 is 3836 tons (or less) per year. In 2002, the Connecticut DEP began a nitrogen credit trading system, whereby towns and cities that reduce nitrogen discharges below their targets can earn money by selling the resulting "credits," and other towns can purchase credits if they cannot otherwise meet their targets cost-effectively.

This indicator tracks the nitrogen discharged to the Sound and major rivers by 79 Sewage treatment plants, 3 large coastal industrial facilities, and a group of industrial sources in the Naugatuck River watershed.

## Trends

Connecticut's investments in nitrogen-removal technology have been successful. The goal for 2004 was exceeded three years ahead of schedule.

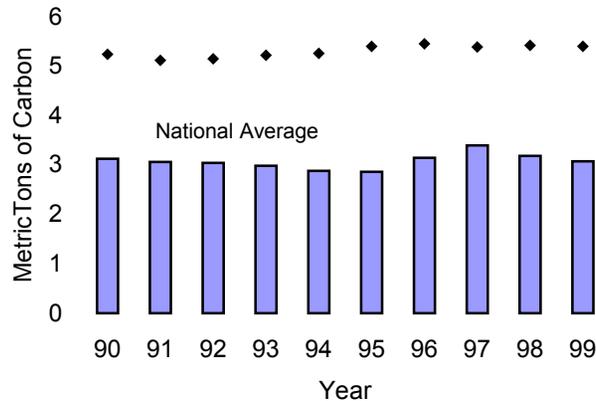


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# Carbon Dioxide Emissions Per Connecticut Resident

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## Leading Environmental Indicator #2



## Background

Carbon dioxide is added to the atmosphere primarily through the burning of oil, coal, and gas. These fuels are used in manufacturing, electricity generation, transportation, and the heating of buildings. Carbon dioxide is called a “greenhouse gas” because it traps heat near the earth’s surface, like the glass roof of a greenhouse. It might play an important role in global climate change, which could contribute to a rise in sea level over time and change to the state’s flora and fauna. Carbon dioxide and other greenhouse emissions are calculated annually by the federal government, and are converted to and expressed as tons of carbon. The graph shows the average resident’s contribution of carbon to the atmosphere.

## Trends

Less consumption of residual oil by power utilities is the most probable reason for the downward trend in CO<sub>2</sub> emissions until 1996, when electric utilities increased their consumption of fuel to compensate for the shutdown of some nuclear power plants. Gradually, the nuclear plants were brought back on line. Data for the last three years are not yet available.

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# Garbage Burial

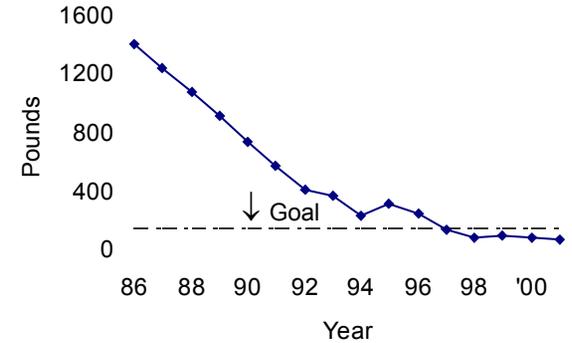
Average resident's share of municipal solid waste buried in landfills within Connecticut

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Leading Environmental Indicator #3

## Background

Disposal of municipal solid waste by burial in landfills is the least desirable management option, with source reduction, recycling, and resource recovery (energy recovery through incineration) the most favored. This indicator charts progress toward the goal of reducing reliance on landfills, which has been the goal of state solid waste policy since the 1970s. Connecticut's plan calls for reducing the average resident's landfill contribution to about 170 pounds per year.



## Trends

Since 1986, six resource recovery plants have begun operation, collection of recyclables has improved to account for at least 23% of municipal waste, some manufacturers have reduced the weight of products and packaging, and some consumers have altered buying habits. These factors allowed dozens of landfills to close as they became full or as federal regulations prohibited their continued operation.

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# Recycling

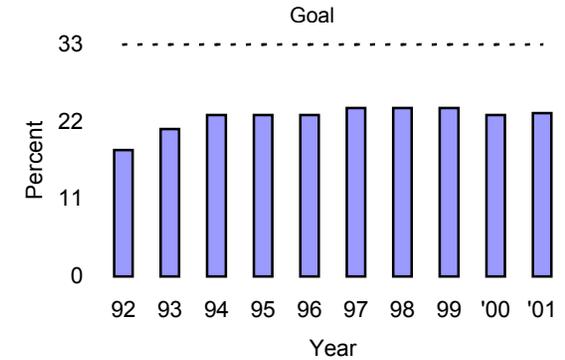
Percentage of municipal solid waste collected for recycling

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Leading Environmental Indicator #4

## Background

The General Assembly established a goal of reducing and recycling 40% of Connecticut's municipal solid waste stream by the year 2000; the DEP has calculated that this would require 33% of the waste to be recycled (with the other 7% disappearing through waste reduction). The actual numbers shown in this graph are probably low, as some recycled materials, such as batteries and bottles returned for deposit, can not be counted.



## Trends

The statewide average has been holding steady, fluctuating between a disappointing 23% and 24%. More stable markets for collected materials are expected as manufacturers continue to invest in factories that use recycled materials. Small businesses, municipalities, and residents will need to improve their recycling efforts if Connecticut is to meet its goal.



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## Driving Our Cars

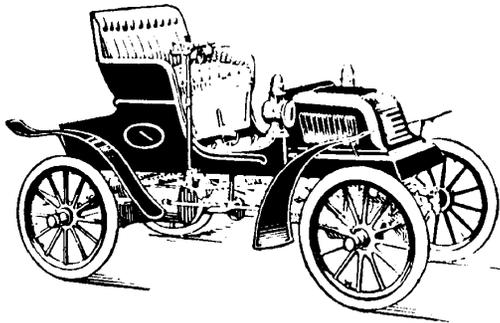
Number of miles that the average Connecticut resident drives a vehicle every day

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Leading Environmental Indicator #5

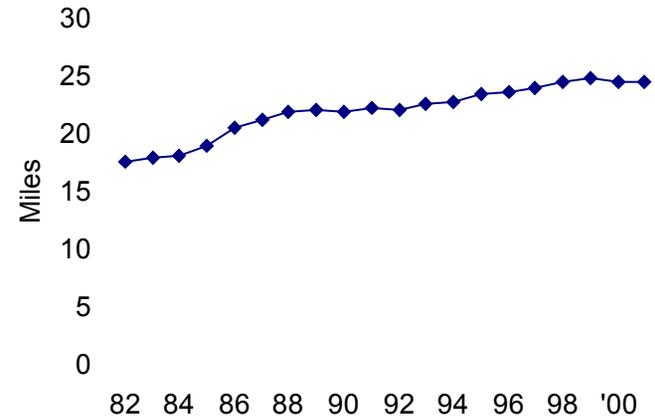
### Background

Driving a car is probably the most environmentally harmful activity a Connecticut resident will engage in. Trucks and the increasingly popular sport utility vehicle cause even greater damages. Impacts are direct (air pollution, oil leakage, etc.) and indirect (stimulating demand for new roads). The Department of Transportation (DOT) estimates total miles driven each year in Connecticut.



### Trends

Every year until 2000, the average Connecticut resident drove more miles than the previous year. The reasons are complex and include the fact that most new development is accessible only by car. In 2001, there was again a slight increase in miles driven.



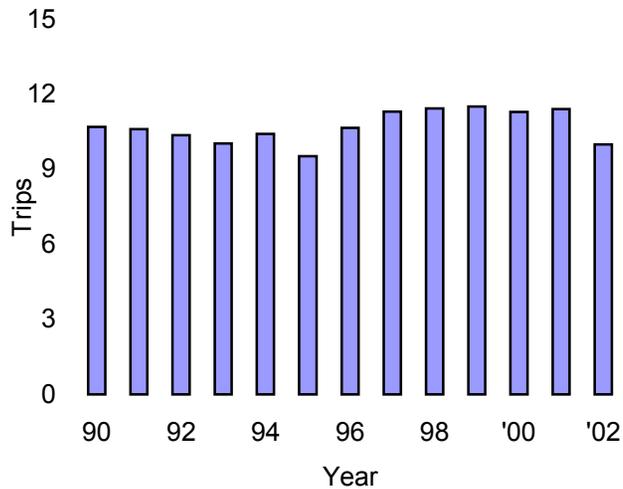
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## Taking the Bus

Average number of local bus trips taken  
by Connecticut residents

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Leading Environmental Indicator #6



### Background

Riding a bus is just one alternative to the negative environmental impacts of driving a car. Ridership data are collected by the DOT.

### Trends

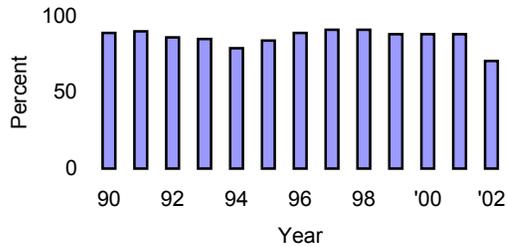
There was a 13% decline in bus ridership in 2002 from 2001. Two of the largest bus lines, in Bridgeport and Norwalk, carried significantly fewer passengers. Improvements prior to 2002 were probably the product of better bus routing and the successful efforts of some companies to encourage transit use by employees.

# Compliance

Percentage of facilities found to be in compliance with environmental laws

## Leading Environmental Indicator #7

All DEP Programs

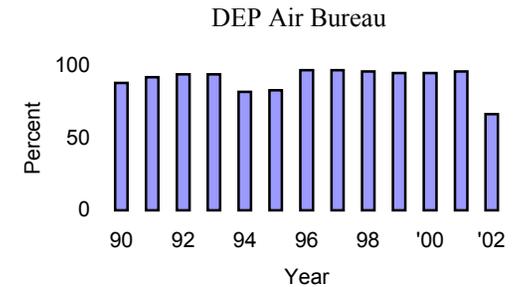
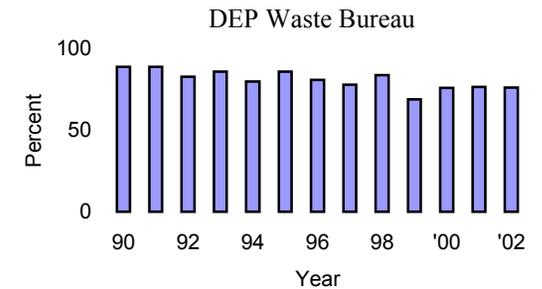
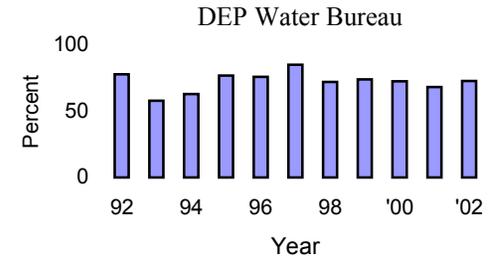


## Background

This indicator shows the approximate percentage of inspections performed by the DEP that found the inspected facilities in full compliance with pertinent environmental laws and regulations.

## Trends

The downturn in 2002 was due to a large number of violations in one air quality program (Stage II Vapor Recovery). Most other programs in the Air Bureau showed compliance rates greater than 90%, but more than 1,000 service stations had Stage II violations, characterized by the DEP as minor labeling and reord-keeping violations. Short-term downturns might not reflect serious problems if the long-term trend is toward full compliance.



## Part III

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# Activities of the Council on Environmental Quality in 2001

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### The Public Gains Better Access to State Government

The Connecticut Environmental Policy Act (CEPA) is the law that requires state agencies to evaluate environmental impacts of their proposed projects. Quietly this law yields improvements to our land and water every year, but it sporadically gains public attention by generating unproductive controversy and litigation. Following up on its own draft report on CEPA, the Council worked with other state agencies and many nongovernmental organizations to propose improvements to the Act. For the first time in 30 years, the General Assembly made significant changes to CEPA in 2002.

Public Act 02-121 changed the Council's duties under CEPA substantially. To begin with, the Council will no longer have an important role relative to disputed Findings of No Significant Impacts because – consistent with a CEQ recommendation – there will be no more such Findings. Agencies now will complete full Environmental Impact Evaluations (EIEs) for all projects.

In October, 2002 the Council launched a new on-line publication, the *Environmental Monitor*. As specified by P.A. 02-121, the Monitor contains notices of all EIEs prepared by state agencies, as well as early warning or “scoping” notices prepared by agencies well in advance of the environmental studies. The *Monitor* replaces the Connecticut Law Journal as the official publication for these types of notices, and offers several superior features, such as links to project maps, CEPA regulations, and e-mail to the project sponsors. It is available for free to any citizen. (One can sign up through the Monitor web site at <http://www.ct.gov/ceq/monitor.html>).

The Council is proud of having developed and launched the technologically-advanced *Environmental Monitor* on time and at no cost to its own budget. This was made possible by the willingness of all state agencies to participate by submitting their own notices on-line (negating any need for CEQ staff to write or edit copy) and by the outstanding support of the Department of Information Technology.

At the same time it was developing the *Environmental Monitor*, Council staff moved its main web site to the new state portal, to enable complete integration of the two. This effort is paying off hugely in conserved staff time, as all mailing lists – such as e-alerts for meetings and for twice-monthly notices of the *Environmental Monitor* – are now administered by the portal structure. Citizens sign themselves up on-line for the notices they want, and the Council staff need not maintain the lists

### *Listening to the Public*

Because of an unusually heavy schedule of speakers at regular Council meetings, the Council held just one public forum in 2002. Elected officials, representatives of land trusts, conservation and economic development organizations, and health advocacy groups, as well as individual citizens spoke to the Council in Brookfield in October. Consistent with forums held across Connecticut since 1996, the majority of comments (55%) concerned the set of problems often grouped under the “**Smart Growth**” banner: Conservation of open space, transportation options, historic preservation, and the quality of life in our cities. There were also concerns expressed about **mercury** in local waterways (36%). Other topics raised in Brookfield include:

- Poor communication between the state and municipal governments
- Funding for soil and water conservation districts
- Air quality in schools
- Transmission lines
- Abuse of environmental regulations
- Conservation of inland wetlands
- Unfunded mandates and insufficient assistance to towns
- Urban wildlife habitat
- Water planning, stream flow, water diversions

Many of the speakers throughout the year assisted the Council in learning about persistent statewide environmental problems that will require attention. This information is being used by the Council to assess priorities for future action. Organizations that presented information in 2002 include the Farmington River Watershed Association, Metropolitan Conservation Alliance, Quinnipiac River Watershed Partnership, Institute for Sustainable Energy, National Audubon Society, Friends of the Goodwives River, Fuss and O’Neill, Inc., Connecticut League of Conservation Voters Education Fund, Connecticut River Watershed Council, Rivers Alliance of Connecticut, Connecticut Fund for the Environment, Connecticut Coalition for Clean Air, Citizens for Responsible Growth, the University of Connecticut, and the Department of Environmental Protection (DEP).

In April 2002 the Council published “Great Infestations,” a special report on invasive species (see page 4). As always, the Council invited a range of interested parties to comment on a draft version, including the University of Connecticut, Connecticut Invasive Plant Working Group, Connecticut Nursery and Landscape Association, The Nature Conservancy, and the DEP. Their comments were very helpful to the Council’s deliberations on recommendations for action.

### *Solving Problems*

The Council investigates numerous citizen complaints every year. In 2002, the Council prepared a detailed memo on environmental regulations and their application to the University of Connecticut. This followed receipt of numerous complaints. Several important changes were made when “UConn for the 21<sup>st</sup> Century” was adopted by the General Assembly in 2002, specifically eliminating potential expedited environmental permit procedures and ensuring consistency with the State Plan of Conservation and Development.

Another citizen complaint – first brought to light at a public forum in Guilford in 2001 – alerted the Council to the odd fact that nothing prohibited the use of so-called package sewage treatment plants to serve intensive development in drinking water supply watersheds, provided the plants discharged underground and not to streams. The Council worked on this problem and remedial legislation was adopted in 2002 (Public Act 02-129).

The Council also reviewed state-funded projects brought to the Council’s attention by alert citizens, and provided advice to the Commissioner of Environmental Protection and also to the Office of Policy and Management, particularly about compliance with CEPA.

## CEQ MEMBERS

**Donal C. O'Brien, Jr. (Chairman)** Resident of New Canaan. Original charter member of Connecticut Council on Environmental Quality, 1971. Retired partner in the law firm of Milbank, Tweed, Hadley & McCloy. Former member, CT Council on Environmental Quality (1971-1976). Former member, CT Fish and Game Commission (1971-1972). Chairman, Board of Directors, National Audubon Society. Board of Directors, Waterfowl Research Foundation. Chairman, Board of Directors, Atlantic Salmon Federation. Founder, Director, Connecticut League of Conservation Voters. Former Vice-Chairman, Board of Governors, The Nature Conservancy. Former President, International Council for Bird Preservation. Founder and Chairman Emeritus, American Bird Conservancy. Chairman Emeritus, Quebec Labrador Foundation. Former Director/Trustee, Delta Waterfowl Foundation, CT Waterfowlers Association and Theodore Gordon Flyfishers.

**Susan D. Merrow.** Resident and First Selectman of East Haddam. Member, Northeast Advisory Committee, Trust for Public Land. Member, Sierra Club National Political Committee. Former President, CT Conference of Municipalities. Former President, National Board of Directors, Sierra Club. Author, *One for the Earth: Journal of a Sierra Club President*. Former Executive Director, Common Cause in CT. Former Co-Chair, CT Greenways Committee.

**Thomas F. Harrison.** Resident of Avon. Partner in the Hartford-based law firm of Day, Berry & Howard LLP. Member and Chairman, Avon Board of Finance. Board of Directors, Connecticut League of Conservation Voters. Executive Committee and Past Chairman, Environmental Law Section, CT Bar Association. Board of Directors and Chair, CT Chapter, Air & Waste Management Association. Board of Directors, National

Audubon Connecticut. Former Member, Advisory Council on the Environment, MetroHartford Chamber of Commerce. Environmental Professionals Organization of CT. Small Business Compliance Advisory Panel, CT Department of Environmental Protection. CT Environmental Forum. Adjunct Instructor of Environmental Law, Rensselaer Polytechnic Institute (Hartford Graduate Center). Former Member, Avon Inland Wetlands Commission.

**Susan B. Mendenhall.** Resident and Four-Term Town Councilor of Ledyard, currently serving as Chairman. Member, Land Use/Planning/Public Works Committee. Former Member, Finance Committee. Council Liaison to Inland Wetlands and Watercourses Commission, Zoning Commission, Ledyard Emergency Planning Council. Former Council Liaison to Senior Citizens Commission, Economic Development Commission, Board of Education. Past Member, Board of Directors of The Connecticut Institute for Municipal Studies. Member, Property Tax Reform Commission. Former Stock Trader, Investment Corporation of Virginia. Former Tax Consultant. Member, Navy League.

**Earl W. Phillips, Jr.** Resident of Middle Haddam, village of East Hampton. Partner with the law firm of Robinson & Cole LLP and Chair of its Environmental Practice. Executive Committee, Environmental Section of the CT Bar Association. Member, past and present DEP Advisory Committees, including E-2000, Waste, and Water. Executive Steering Committee, CBIA Environmental Policies Council and Chairman of its Hazardous Waste Section. Multiple publications, including: *Brownfields Law and Practice: The Cleanup and Redevelopment of Contaminated Land*, CT Chapter (Matthew Bender), *Environmental Law Practice Guide*, Connecticut Chapter

(Matthew Bender). Adjunct Instructor of Environmental Law, Wesleyan University, University of Connecticut, and Rensselaer Polytechnic Institute (Hartford Graduate Center). Chairman, Environmental Section, National Institute of Municipal Law Officers.

**Ann H. Sherwood.** Resident of Kent. Paralegal in the law firm of John V. A. Murray, P.C. Member, Board of Managers, Appalachian Trail Conference. Connecticut Coordinator, Appalachian Trail Conference Land Trust. Member, Trails Committee, Connecticut Chapter, Appalachian Mountain Club. Registered advocate, Office of Protection and Advocacy For The Disabled. Registered activist, Americans For Our Recreation and Heritage and the Appalachian Mountain Club. Member, Philips Academy Alumni Council. Former board member and President, Connecticut Association of Paralegals, Inc. Founding board member and past President, Springdale Neighborhood Association. Former Clubwide Conservation Chairperson, Appalachian Mountain Club (1998-2000). Former member, Conservation Program Committee, Advisory Board to Board of Directors, Appalachian Mountain Club. Former Member, Advisory Board, Cornerstone Bank. Former Member, Corporation of United Way, Stamford.

**Wesley L. Winterbottom.** Resident of West Hartford. Professor and Coordinator of Environmental Science and Toxicology, Water Management and Wastewater Programs, Gateway Community College. Instructor of Environmental Issues, Eastern Connecticut State University; Fullbright China Seminars Abroad Program Scholar. Registered Professional Engineer, Diplomate American Academy of Environmental Engineers. National Science Foundation Fellow Advanced Technology Environmental Education Center, University of Northern Iowa. ANSI/GETF Certified ISO 14000 Trainer. Faculty Advisor, Mt. Rainer National Park, Rocky Mountain National Park, Western

Arctic National Parklands. Board Member, Northeast Partnership for Environmental Technology Education. President, Connecticut Consortium for Enhancing Learning and Teaching. Past-Director, Gateway Community College Center for Teaching Excellence.

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## Memo to Readers:

We would like to hear from you. Does this report give you the information on Connecticut's environment that you need? Is something missing?

Mail: 79 Elm Street, Hartford, CT 06106

Phone: 860-424-4000 ( messages can be left 24 hours a day)

Fax: 860-424-4070

E-mail: [karl.wagener@po.state.ct.us](mailto:karl.wagener@po.state.ct.us)



Find up-to-date information about Council meetings, forums and reports throughout the year at [www.ct.gov/ceq](http://www.ct.gov/ceq)



## COUNCIL ON ENVIRONMENTAL QUALITY

The duties of the Council on Environmental Quality are described in Sections 22a-11 through 22a-13 of the Connecticut General Statutes. The Council is a nine-member board that works independently of the Department of Environmental Protection (except for administrative functions). The Chairman and four other members are appointed by the Governor, two members by the President Pro Tempore of the Senate and two by the Speaker of the House. The Council's primary responsibilities include:

- 1) Submittal to the Governor of an annual report on the status of Connecticut's environment, including progress toward goals of the "Environment 2000" statewide environmental plan, with recommendations for remedying deficiencies of state programs;
- 2) Review of state agencies' construction projects; and
- 3) Investigation of citizens' complaints and allegations of violations of environmental laws.

In addition, under the Connecticut Environmental Policy Act (CEPA) and its attendant regulations, the Council on Environmental Quality reviews Environmental Impact Evaluations that state agencies develop for major projects. The Council publishes the Environmental Monitor (<http://www.ct.gov/ceq/monitor.html>), the official publication for state project information under CEPA.

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*(through 12/02)*

